

CLAIMS

I claim:

1. A method for changing a configuring of an error correction code (ECC) logic circuit for performing an error-check of a changed data-width comprising:

sequentially interconnecting a set of N1 identical error-check blocks where N1 is a first positive integer; and

reconfiguring said ECC logic circuit by changing said ECC logic circuit to a set of N2 sequentially interconnected circuits comprising N2 of said identical error-check blocks where N2 is a second positive number.

2. The method of claim 1 wherein:

said step of sequentially interconnecting a set of N1 identical error-check blocks is a step of interconnecting said N1 error-check blocks only between sequentially neighboring blocks for transmitting signals only between said neighboring error-check blocks; and

said step of reconfiguring said ECC logic circuit by changing said ECC logic circuit to a set of N2 sequentially interconnected circuits is a step of interconnecting said N2 error-check blocks only between sequentially neighboring blocks for transmitting signals only between said neighboring error-check blocks.

3. A method for operating a memory device comprising a plurality of memory cells, comprising:

performing an error-check on said memory cells; and

repairing a faulty memory cell storing an error data bit.

4. The method of claim 3 wherein:

said step of repairing a faulty memory cell further
comprising a step of performing said step of repairing said
faulty memory cell automatically by writing a correct bit into
said faulty memory cell.

5. A memory device comprising a plurality of memory cells
each having a floating gate for storing a plurality of electric charges
therein, said memory device further comprising:

an error-check logic circuit includes a set of identical error-
check blocks sequentially interconnected for checking errors
of data storage in said memory cells.

6. The memory device of claim 5 further comprising:

a multiple-level voltage means for applying at least two
electrical charge levels on said floating gates for representing
at least two binary bits stored in said memory cells.

7. The memory device of claim 6 further comprising:

a multiple-level electrical-charge sensing means for sensing
at least two electric-charge levels stored in said floating gates
for detecting at least two binary bits stored in said memory
cells.

8. The memory device of claim 7 wherein:

said multiple-level electrical-charge sensing means further
comprising a bit-pattern means for generating a bit-pattern
based on said electric-charge levels sensed by said multiple-
level electrical-charge sensing means.

9. The memory device of claim 7 wherein:

said bit-pattern means is further provided for generating a sequence of bit-patterns based on said electric-charge levels wherein each of said bit patterns based on a first electrical-charge level differing by only a single bit from a second bit-pattern representing a second electrical-charge level sequentially adjacent to said first electrical-charge level.

10. A memory device comprising a plurality of memory cells each having at least two memory-cell characteristic-states each representing a bit-pattern stored therein, said memory device further comprising:

an error-check logic circuit includes a set of identical error-check blocks sequentially interconnected for checking errors of data storage in said memory cells.

11. A content addressable memory (CAM) device comprising a plurality of memory-cell arrays for storing an array content therein provided for an data-access to an array based on a match with said array content, said CAM device further comprising:

an error-check logic circuit for checking errors of said data access to each of said memory-cell arrays.

12. The content addressable memory (CAM) device of claim 11 further comprising:

an error-code storage means for storing an error-code check (ECC) bit for each of said memory-cell array used by said error-check logic circuit for checking errors of said data access to each of said memory-cell arrays.

13. The content addressable memory (CAM) device of claim 11
wherein:

each of said memory-cell array further storing an error-code
check (ECC) bit generated by said error-check logic circuit
for checking errors of said data access to each of said
memory-cell arrays.

14. The content addressable memory (CAM) device of claim 11
wherein:

said error-code storage means is a random access memory
(RAM) device for storing said error-code check (ECC) bit for
each of said memory-cell array used by said error-check
logic circuit for checking errors of said data access to each of
said memory-cell arrays.

15. A memory device comprising a plurality of memory cells
each having a floating gate for storing a plurality of electric charges
therein, said memory device further comprising:

a multiple-level electrical-charge sensing means for sensing
at least two electric-charge levels stored in said floating gates
as a sequence of charge levels for detecting at least two
binary bits for recording a plurality of bit patterns stored in
said memory cells;

said multiple-level electrical-charge sensing means further
includes a bit-pattern means for generating a sequence of
bit-patterns based on said sequence of electric-charge levels
wherein each of said bit patterns based on a first electrical-
charge level differing by only a single bit from a second bit-
pattern represented by a second electrical-charge level
sequentially adjacent to said first electrical-charge level.

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Parameter	Unit	Value
Initial concentration	mol/L	0.1
Initial temperature	°C	25
Initial pH		7.0
Initial ionic strength	mol/L	0.1
Initial volume	L	1.0
Initial pressure	atm	1.0
Initial density	g/cm ³	1.0
Initial viscosity	Pa·s	0.01
Initial conductivity	S/cm	0.1
Initial refractive index		1.33
Initial surface tension	N/m	0.072
Initial dielectric constant		80
Initial magnetic permeability	T·m/A	4π × 10 ⁻⁷
Initial electric permittivity	F/m	8.85 × 10 ⁻¹²
Initial thermal conductivity	W/m·K	0.6
Initial specific heat capacity	J/kg·K	4184
Initial enthalpy of formation	J/mol	-285.8
Initial Gibbs free energy of formation	J/mol	-237.1
Initial entropy of formation	J/mol·K	69.9
Initial chemical potential	J/mol	-237.1
Initial activity		1.0
Initial fugacity	Pa	1.013 × 10 ⁵
Initial vapor pressure	Pa	2338
Initial boiling point	°C	100
Initial melting point	°C	0
Initial triple point	°C	0.01
Initial critical point	°C	373.95
Initial normal boiling point	°C	100
Initial normal melting point	°C	0
Initial normal triple point	°C	0.01
Initial normal critical point	°C	373.95
Initial normal boiling point pressure	Pa	101325
Initial normal melting point pressure	Pa	101325
Initial normal triple point pressure	Pa	101325
Initial normal critical point pressure	Pa	21830000
Initial normal boiling point density	g/cm ³	0.958
Initial normal melting point density	g/cm ³	0.999
Initial normal triple point density	g/cm ³	0.999
Initial normal critical point density	g/cm ³	0.322
Initial normal boiling point viscosity	Pa·s	0.001
Initial normal melting point viscosity	Pa·s	0.001
Initial normal triple point viscosity	Pa·s	0.001
Initial normal critical point viscosity	Pa·s	0.001
Initial normal boiling point conductivity	S/cm	0.055
Initial normal melting point conductivity	S/cm	0.055
Initial normal triple point conductivity	S/cm	0.055
Initial normal critical point conductivity	S/cm	0.055
Initial normal boiling point refractive index		1.33
Initial normal melting point refractive index		1.33
Initial normal triple point refractive index		1.33
Initial normal critical point refractive index		1.33
Initial normal boiling point surface tension	N/m	0.072
Initial normal melting point surface tension	N/m	0.072
Initial normal triple point surface tension	N/m	0.072
Initial normal critical point surface tension	N/m	0.072
Initial normal boiling point dielectric constant		80
Initial normal melting point dielectric constant		80
Initial normal triple point dielectric constant		80
Initial normal critical point dielectric constant		80
Initial normal boiling point magnetic permeability	T·m/A	4π × 10 ⁻⁷
Initial normal melting point magnetic permeability	T·m/A	4π × 10 ⁻⁷
Initial normal triple point magnetic permeability	T·m/A	4π × 10 ⁻⁷
Initial normal critical point magnetic permeability	T·m/A	4π × 10 ⁻⁷
Initial normal boiling point electric permittivity	F/m	8.85 × 10 ⁻¹²
Initial normal melting point electric permittivity	F/m	8.85 × 10 ⁻¹²
Initial normal triple point electric permittivity	F/m	8.85 × 10 ⁻¹²
Initial normal critical point electric permittivity	F/m	8.85 × 10 ⁻¹²
Initial normal boiling point thermal conductivity	W/m·K	0.6
Initial normal melting point thermal conductivity	W/m·K	0.6
Initial normal triple point thermal conductivity	W/m·K	0.6
Initial normal critical point thermal conductivity	W/m·K	0.6
Initial normal boiling point specific heat capacity	J/kg·K	4184
Initial normal melting point specific heat capacity	J/kg·K	4184
Initial normal triple point specific heat capacity	J/kg·K	4184
Initial normal critical point specific heat capacity	J/kg·K	4184
Initial normal boiling point enthalpy of formation	J/mol	-285.8
Initial normal melting point enthalpy of formation	J/mol	-285.8
Initial normal triple point enthalpy of formation	J/mol	-285.8
Initial normal critical point enthalpy of formation	J/mol	-285.8
Initial normal boiling point Gibbs free energy of formation	J/mol	-237.1
Initial normal melting point Gibbs free energy of formation	J/mol	-237.1
Initial normal triple point Gibbs free energy of formation	J/mol	-237.1
Initial normal critical point Gibbs free energy of formation	J/mol	-237.1
Initial normal boiling point entropy of formation	J/mol·K	69.9
Initial normal melting point entropy of formation	J/mol·K	69.9
Initial normal triple point entropy of formation	J/mol·K	69.9
Initial normal critical point entropy of formation	J/mol·K	69.9
Initial normal boiling point chemical potential	J/mol	-237.1
Initial normal melting point chemical potential	J/mol	-237.1
Initial normal triple point chemical potential	J/mol	-237.1
Initial normal critical point chemical potential	J/mol	-237.1
Initial normal boiling point activity		1.0
Initial normal melting point activity		1.0
Initial normal triple point activity		1.0
Initial normal critical point activity		1.0
Initial normal boiling point fugacity	Pa	1.013 × 10 ⁵
Initial normal melting point fugacity	Pa	1.013 × 10 ⁵
Initial normal triple point fugacity	Pa	1.013 × 10 ⁵
Initial normal critical point fugacity	Pa	1.013 × 10 ⁵
Initial normal boiling point vapor pressure	Pa	2338
Initial normal melting point vapor pressure	Pa	2338
Initial normal triple point vapor pressure	Pa	2338
Initial normal critical point vapor pressure	Pa	2338
Initial normal boiling point boiling point	°C	100
Initial normal melting point boiling point	°C	100
Initial normal triple point boiling point	°C	100
Initial normal critical point boiling point	°C	100
Initial normal boiling point melting point	°C	